HUMAN AD

HELIcopter PROfessional Pilots Safety Program
Volume 12 ☆ Number 1 ☆ **2000**

Heliprops

Do You See That Pole?

The following account was contributed by a reader.

"It started out a normal shift, you know, preflight the aircraft, complete the required paperwork, fly left turns patrolling over the city, a search here and there, the night shift.

We had a pre-scheduled operation at 3:00 a.m. to relocate the aircraft to a designated area for a stand-by operation. We had done this before in the same area, a small school lot, which had many power lines running directly overhead, and offset to one side. It had safe approach and departure paths, and the LZ was somewhat confined to the left and right, with power lines on one side, and trees on the other.

High and low recons complete, the observer and I confirm the power poles, wires, and trees. The pre-landing checks complete, and turning to a steep approach to final. It's 2:55 a.m.

I position my search light to the many power poles to the right of the aircraft as we parallel the wires and the trees. The observer was moving his nightsun on the forward and left side of the aircraft.

At 100 feet AGL the observer in a normal tone calls out "You have the Pole?"

I reply "Yes I have the pole," as I concentrate at our 1 o'clock, going to the 2 o'clock position.

At 50 feet AGL the observer again calls out "You have the pole?" I reply "Yes, I have the pole and I have it lit up," as the power pole is now passing our 2 o'clock position, and I have the search light directed upon it.

At 25 feet AGL we're starting to pick up dust and grass and the observer says as if his personal proximity warning indicator went off, "You got the pole, right?" I reply "Yes, I have the pole right, it's tight but no factor." As the power pole goes to our 3 o'clock position.

Hovering now and the trees to the left seem to be a bit closer than I like. I hover slide right three feet, and settle to the surface, as I input a five degree pedal turn.

Normal shutdown, and I exit the aircraft to do a post flight. A quick check down the right side with my flashlight in hand, down the tail-boom. At the vertical fin I run into a volleyball pole attached to a stand, only inches away from the vertical fin, and only inches away from the main rotor blades!!!

First thing that went through my mind was someone had played a joke on us by moving the volleyball pole here after we shut down and before I got out of the aircraft (you know, in about ten seconds), and I yelled out in the darkness "OK, who did this"?

To my amazement no one answered in that quiet still of the morning.

I aimed my flashlight toward the left front of the aircraft thinking my observer had moved the volleyball pole after we landed only to see him just now exiting the aircraft.

I said "What's this?" He replied "That's the pole, the pole I told you about."

It was at this moment that everything in my body went numb, as I realized what had occurred, and just how close I had come to a major problem. My knees gave out, I thanked the Almighty, and I was glad I was wearing my "Depends" that shift.

My observer noticing how I slumped slowly to the ground said "Well, I'm glad you were so smooth on the controls, or it could have been worse." I replied "Great."

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As my blood pressure slowly returned to normal, I decided to replay the final approach with the observer, so that we both could learn what caused this.

1. *All areas were normal to the observer, who called out his threat, "You have the pole?" while he looked at the volleyball pole attached to the tire.*
2. *All areas seemed normal to the pilot who replied, "Yes, I have the pole," while he looked at his threat, thinking that the observer has the power pole also.*
3. *The observer a second time called out his threat "You have the pole?" while seeing the volleyball pole getting closer to the aircraft.*
4. *The pilot thinking that the observer is talking about the power pole threat replied "Yes, I have the pole, and I have it lit up."*
5. *The observer, seeing the volleyball pole very close now calls out "You got the pole, right?"*
6. *The pilot hearing the distress in the observer's voice, about the power pole to the right side of the aircraft replies "Yes,I have the pole right, it's tight but no factor."*

To the crew this day, items one through six had infected communication, seeing two different poles – the power pole and the volleyball pole, and talking as if they were the same pole.

A better way for all of us would be to use effective communication, as in this case, say what you mean in a clear understandable manner.

As an example in this case:

Observer states: "You have the volleyball pole at 11 o'clock 100 feet"?

Pilot states: "I have your volleyball pole at 11 o'clock, and I also have the power pole at 2 o'clock."

After this flight you can bet that I now make sure what the observer states is understood, verified, and very clear, and the same for myself. How about for your operation?"

In every-day activities, including flight operations, it is almost impossible to get through a typical day without communicating with someone else. For most of us, the most common method of dealing with others is through oral communications – talking. Just stop and think about how much of your life is spent in conversation – face-to-face sending and receiving of information.

We take for granted our ability to converse with others. It is such a basic and common occurrence with everyone we live, work and deal with that we may not notice how frequently those oral communications fail.

Accident investigation in recent years has become more sophisticated and comprehensive in being able to determine the causal factors involved in a mishap. Informal and perhaps simplistic analyses lead to statements that suggest approximately 80 % of aviation accidents and incidents, civil or military, foreign or domestic, are caused by some sort of human error, human behavior, human oversight, or human factor. Such an estimate may seem reasonable; but may be difficult to prove. A fact that lends credence to this supposition is that 70% of NASA's Aviation Safety Reporting System (ASRS) Incident Reports mention the presence of some type of communication problem.

Just as every other activity, literally every aspect of aviation depends on the timely and accurate exchange of information.

Maintainers need to be advised of aircraft technical problems, need to understand the schedule under which maintenance is expected, and need to have the knowledge to troubleshoot and fix problems.

Pilots need to know weather conditions, aircraft airworthiness, and a host of information related to airfields and air traffic systems.

Air Traffic Controllers need to know where aircraft are located and where they want to go; as well as the status of many other factors, such as current and forecast weather, that would affect controlling aircraft in a dynamic situation.

Years ago radio communications were affected by limitations of the equipment. Today, the modern communications and navigation systems we operate have largely taken the "buzz" out of communications. Unfortunately, the human element in communications does not seem to have improved. We still have sloppy, careless, and ineffective communications that are responsible for creating confusion, and contribute to situations that are ripe for accidents.

In February, 1989 a Cargo Carrier flying from Singapore to Kuala Lumpur crashed at 437 feet MSL just outside the "KL" Non-Directional Beacon (NDB), fatally injuring all four crewmembers. This accident was partly due to basic errors in communications.

The Boeing 747 was approaching Kuala Lumpur from the southeast. The ILS 33 approach was out of service and was so advertised in NOTAMS, as well as in the ATIS information. Part of the ILS 33 Approach was the "KL" Non-Directional Beacon (NDB) located 7.2 miles from the approach end of Runway 33, and on the ILS Localizer path. See Figure 1. This NDB is also an approach fix for the NDB Runway 33 Approach. For either approach the minimum altitude prior to crossing over the "KL" NDB is 2400 feet. See Figure 2.

Listed below are some of the actual comments by the crew and air traffic controllers as recorded by the aircraft Cockpit Voice Recorder, and on the ground by Air Traffic Control. There were other comments between those listed here, but these are selected to illustrate how careless communications can contribute to confusion and lead to disaster. The comments

marked with an asterisk (*) were internal to the cockpit crew.

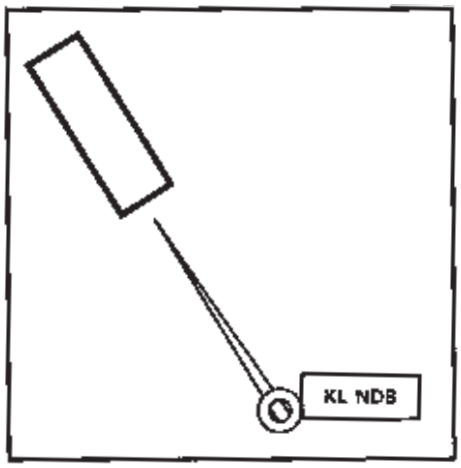

FIGURE 1

APP = Approach Control
CA = Captain
FO = First Officer
TO = Tower Controller

APP: "Aircraft XX continue descent to seven thousand. QNH one zero one one."

CA: "One zero one one, then cleared to seven. We're out of thirteen point five."

APP: "Aircraft XX contact tower one one eight decimal two. Good morning."

CA: "One one eight decimal two. Good morning."

CA: "Kuala Lumpur Tower Aircraft XX. Eighteen two. We're descending to seven thousand, we're out of twelve."

TO: "Aircraft XX descend five five zero zero."

CA: "Five five zero zero. Aircraft XX. We're out of, ah, seventy eight hundred."

FO:* "Five five zero."

CA:* "Fifty five hundred."

TO: "Aircraft XX descend three five zero zero."

CA: "Roger. Cleared thirty five hundred. We're out of six thousand."

TO: "Aircraft XX descend, ah, two seven zero zero."

CA: "Roger. Cleared to, ah, two thousand seven hundred. We're out of forty five."

TO: "Aircraft XX descend two four zero zero. Cleared for NDB approach runway three three."

FO:* "NDB. That S.O.B."

CA: "OK. Four zero zero."

CA:* "You're alright. Just keep going down to four hundred feet."

CA:* "We go down you feel uncomfortable we don't break out we'll make a missed, OK?"

FO:* "OK."

Just prior to the crash the Ground Proximity Warning System (GPWS) gave several aural warnings of "Whoop Whoop Pull Up."

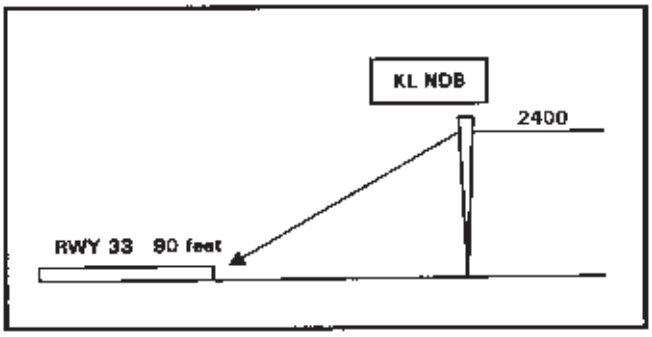

FIGURE 2

Let's take a careful look at the words that were used here.

The first directive from the Approach Controller said "…continue descent to seven thousand."

In accordance with the U.S. FAA Air Traffic Control Manual 7110.65, Paragraph 2-86, "Number Usage", this is a proper expression for Altitudes and Flight Levels. The manual states for Altitudes: "Pronounce each digit in the number of hundreds or thousands followed by the word "hundred" or "thousand" as appropriate." It also states that "Altitudes may be restated in group form for added clarity if the controller chooses."

Several examples.

For 10,000 feet it is correct to say "One zero thousand," or restated "Ten thousand."

For 17,900 feet it is correct to say "One seven thousand nine hundred," or restated "Seventeen thousand nine hundred."

The U.S. Airman's Information Manual (AIM), Chapter 4, Paragraph 4-2-8 gives similar direction for expressing altitudes.

For 4,500 the AIM indicates it is correct to say "Four thousand five hundred."

The Captain's immediate response to the Approach Controller's directive to descend to seven thousand was not strictly in accordance with the AIM. It was however in accordance with the norm amongst experienced pilots. This norm is to abbreviate altitudes in a readback, and for example, say "Seven" instead of "Seven thousand." It is almost never mistaken when pilots abbreviate in this manner.

When the Captain called the Tower he used the strictly correct expression "Seven thousand" as well as the norm expression "out of twelve." Few could argue that this was in any way confusing.

The remainder of the comments by those involved in this mishap are a mixture of those that are technically correct, as well as those that vary significantly from the norm and from the strictly correct expressions.

The Tower later stated "…descend five five zero zero."

As we have explained above, this is not consistent with the strictly correct method of expressing an altitude. It did not use either term "Thousand" or "Hundred."

The Captain responded "Five five zero zero … we're out of seventy eight hundred."

Neither of these is technically correct, but still apparently understandable to the Captain and the Tower Operator.

The First Officer, who was flying

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the aircraft, said "Five five zero." Perhaps his intention was to say "Five five zero zero" to assure the Captain that he would be descending to 5,500 feet. He may have been thinking 5,500 feet but he said "Five five zero."

The Captain apparently noticed the First Officer's comment of "Five five zero," and reiterated "Fifty five hundred."

It is not unusual for a person to say something other than what he means. It appears that this may have been the case here, and apparently caused no confusion.

The Tower gave two more changes in altitude "descend three five zero zero" and "descend, ah, two seven zero zero" using expressions that were neither technically correct, nor in accordance with the norm. Not correct, but apparently understood.

Keep in mind that the Tower Operator's basic language was not English. He may not have been fluent in the use of the terms "Thousand" and "Hundred."

The next Tower expression to direct the aircraft to a lower altitude, the altitude that was the minimum for crossing the NDB - 2,400 feet - was the killer. He said: "…descend two four zero zero. Cleared for NDB Approach runway three three." If one would listen closely to the tape of the Tower Operator's comment the inflection and pace of delivery make it sound as though he says "descend to four zero zero" rather than "descend two four zero zero." Apparently the distinction was not observed by the crew.

On the flight deck the First Officer exclaimed "NDB. That S.O.B!"

The Captain read back "OK. Four zero zero,"

The crew was obviously not expecting an NDB approach clearance. That distraction, coupled with the Tower Operator's incorrect expression of altitude may have been the final piece that led to the crew's confusion and misinterpretation that resulted in descending far below the 2,400 feet minimum altitude.

Oral communications are a fundamental tool in aviation, and as we have seen, professionals with the best intentions can still contribute to misunderstandings and confusion through the use of ambiguous or non-standard phraseology.

In January, 1990 an Avianca Boeing 707 crashed during its second approach into New York's JFK International Airport. The flight originated in Colombia, and, due to poor weather along the Eastern Seaboard, was placed in holding three separate times for a total of one hour and seventeen minutes. During the last holding the crew advised the controllers that they could not hold for longer than 5 minutes because they were running out of fuel, and they could no longer reach their alternate, Boston Logan Airport.

The NTSB determined probable causes to be "… failure to communicate an emergency fuel situation to Air Traffic Control before fuel exhaustion," and "…lack of standardized terminology for pilots and controllers for minimum and emergency fuel states."

Helicopter operations tend to provoke non-standard radio phraseology. Approach controllers, tower operators, flight service station attendants, and ground controllers are attuned to airplane operations. Airplanes takeoff and land on runways, join standard routes and traffic patterns, and maneuver on taxiways and ramps. Helicopters frequently do all sorts of stuff which may never include traffic patterns, runways, taxiways or ramps. Many do not use an airport at all.

What, for instance, is the standard radio phraseology for a helicopter pilot to ask permission of a tower to enter his Airport Traffic Area, come to a 700 foot hover to follow/film a parade, and then land in the Wal Mart parking lot to pick up Santa Claus?

Controllers not familiar with helicopter operations may have an awkward time fitting helicopters into their airplane standards. It would be fair to say that helicopters are handled inconsistently by Air Traffic Control. Those controllers who are familiar with helicopter operations do just fine. But those who do not regularly handle helicopters can be uncertain. That uncertainty may result in less-than-optimal situations. One is that a conservative controller may force the helicopter to conform to his airplane operations, causing needlessly longer, time consuming routes/traffic patterns. Another is that a cooperative controller, with the intention to be helpful, may give clearances that he thinks the helicopter operator might want. Things like downwind takeoffs, landings over the hangars, and takeoffs from present ramp position.

Many helicopter operations do not lend themselves to standard radio phraseology. The best advise here is to use ordinary language. If you want to land on top of the First National Bank building tell the controller want you want. Don't mask your intention in "Airplane Talk" that turns into twenty questions.

Reflect on your communications.

Careless communications can lead to confusion, raised tempers, problems, errors and ultimately - incident and accidents. Remember also that half of communicating is listening.

Pay attention; and if you are not certain about what you hear, question it.

Be alert for ambiguity and non-standard phraseology.

The old saying "Sticks and stones can break my bones; but words will never hurt me" is not true. As the accounts above attest, words alone can create a lethal situation.

There I Was...

Here are some accounts sent to us by readers.

Scared, Angry, Calm.

"This was in a Hughes 500. It was a joint exercise with a local Marine Corps Air Unit. It was scheduled for 6:00 p.m. I was the junior pilot and would be in the right seat. I had recently gotten my instrument rating. The senior pilot and Pilot-in-Command (PIC) was instrument rated too, but he was not current. It had been a long time since he had done any IFR work.

In the back seat we carried a Marine helicopter pilot. He was there to provide liaison for communications during the training operation. Obviously, in this aircraft, he could not routinely reach and operate the flight controls.

We did a weather check. It was OK to launch, but it was not good. Takeoff was after dark. Enroute to the exercise area it was apparent that the weather had already deteriorated and would not permit this mission under VFR flight rules.

We called back to Cecil Field to advise the Marine Operations to cancel the exercise due to weather.

Now we had to get back to our base. Scattered fog. Trying to fly around pieces of it. Occasionally in and out of it. Overflew several parking lots that would have been adequate landing spots. My PIC said he could make it back home VFR, and continued. He followed a road that he thought would help. Then we went into the fog and didn't come out. We told the tower. They asked us if we wanted a GCA. I said "Yes." The PIC flew, but it was apparent that he was tense and stiff. He seemed to have target fixation. Focussing on one thing at a time, and for longer than comfortable. He was struggling to fly on the instruments. Apparently he was so busy with his scan that he did not reply to my questions, nor to Cecil tower. I took over the communications. The aircraft began to descend and the airspeed to decrease. Got to a very low airspeed, and the attitude pitched up. We yawed right. The Marine in the back was screaming "We're gonna die." I was scared, then angry that we had allowed ourselves to get into this position. I was very concerned that we were going to crash and die.

We got down to 300 feet and zero knots. I got on the controls. Between the two of us – we were both making inputs - the aircraft yawed right and then left. We were then spinning. In what seemed like just a few seconds we were at 1,200 feet and popped out the top of the fog layer. We could now see Navy Jacksonville and flew there VFR to land and shut down. We had overtorqued the aircraft.

I've had many thoughts about this flight since then. One of which was "When should I have tried to make inputs or attempted to take over the controls?"

Water.

"This was at the 60th Street Heliport in New York City. I was flying a 206B with floats. The airframe fuel filter caution light came on the previous day. My management decided to delay maintenance on this until later, so I was flying it with the fuel filter caution light illuminated. I was on an approach – a right base to final. It was a steep approach at approximately 40 knots. The engine flamed out. I lowered the collective the rest of the way, and turned to the left toward Roosevelt Island. It was a great auto. I touched down with just a little ground speed and the floats inflated. No problem.

A Police boat came up and tossed a line. At first I tied it around the tunnel. That didn't work I had too change to tying ropes to the tips of the skids. That of course required me to have to crawl out onto the floats. They towed me to the 34th Street Heliport because it was a better place to recover the helicopter.

A Police helicopter was able to deliver the appropriate chains, cables, lines, etc. to pull it out of the water with a crane. No damage whatsoever from the towing and the lifting by the crane. My helicopter was in the water for several hours, but during the landing and towing/lifting the tail rotor never touched the water.

The bad fuel came from our own fuel farm. I still have a jar of the fuel that was drained out of the helicopter. It reminds we of one of the silly souvenir glass balls filled with water. Shake it a bit and the little white flakes swirl around like it was snowing. The fuel farm filter had been recently changed. There was a bank of 12 filter receptacles, but only 9 filters were installed, so the fuel essentially was not filtered.

We cleaned out the filter, did some other maintenance work, refueled, started up the helicopter and flew it back home."

YOUR ANSWERS. . . . .

In the last issue we asked "What cockpit system/control head/switch/item do you have difficulty reaching, reading, adjusting, or operating?" Here are some of your answers:

Human AD.

"In response to your question about controls, etc. being hard to see. The OAT gauge in the 206 is hard to see because of the angle and closeness to the pilot. Larger numbers would help because even with bifocals it is too high to see through the bifocals. (Maybe a magnifying cover for the gauge would work)."

"I fly the Bell 407. It is hard to find any complaint. It s a super aircraft and pure fun to fly. However it is unofficially restricted to pilots 6 feet tall and less. Some mods on the pedal assembly allowing for another inch and a half legroom would mean a world of difference for the pilot comfort and the ease of operation. P.S. The limited costs to Bell Textron to remedy this problem would probably be well worth it. The 407 is a dream machine to look at and to fly. I hope to see its world wide sales."

"Most manufacturers have the flight instruments in the same order. The power gages are a different story, even among Bell helicopters. I'm talking of the torque, N1 and TOT/EGT/ITT. I fly the 206B/L and the 212/412. If I fly one for a while, I find myself "looking" for the N1 gage during the start procedure. I would like to see first Bell and then all the other manufacturers come up with a common order for the power instruments."

"What item do I have the most difficulty with? Simple.

Whichever one the manufacturer decides is not important enough to place where I can see it without turning backwards, looking straight up, or using the "touch" (Braille?) method to find.

As mentioned in your Volume 11, Number 4, 1999 issue; when the panel lights go out, and it'' dark on dark outside, you shouldn't need to be Inspector Gadget in order to check a circuit breaker!"

"I fly a B2 AStar in an Airborne Law Enforcement configuration. The Video recorder is under the middle passenger seat. One of the crew must turn around lower his head and extend his arm and with a pencil in hand push the record button. This is a very awkward and time consuming maneuver. The potential of initiating inner ear disorientation is present.

We are working on a hard wired remote system that is in place but unreliable.

I also fly the AH-64, the APU selector switch is behind and to the right of the pilot's centerline. It is not as bad a reach, but requires moving your head position, (like many switches it has a unique cut to confirm by feel that you are selecting the right switch). Also a portion of the overhead circuit breakers are to the left are behind your head."

"Your recent issue asked what cockpit switches etc. Are difficult to see or operate.

On the Bell 430, the FADEC switches for Auto/Man operation are protected by a clear plastic lift cover and when any kind of sunlight, moonlight or other form of light shines across the plastic at any angle, then the switch cover becomes optically opaque and you cannot tell if the switch is in manual or auto mode. We have had two, thankfully quickly aborted incidents that did no damage to our aircraft because the pilot did not see that the mode light (amber MAN annunciated) was lit. One incident was during a start and was noticed before the throttle was opened and the other incident occurred after a start, when the throttle was being moved from idle to flight and again, luckily, the pilot was opening the throttle slowly enough to have not oversped the engine.

Much of the same type of issue with the Bell 430 fire switches/liftcovers. The ARM annunciator is very difficult to see.

Better checklist use would have prevented these inadvertent incidents but the liftcovers are still not easy to read in all light conditions --especially when the FADEC switches are not in front of the pilot."

"The KLN 900 – too much time is spent heads down programming the unit. On a night VFR training route with a flight surgeon, weather conditions deteriorated rapidly south of Crestview on our way to Panama City. At 700 – 900 feet we encountered inadvertent IMC and at 1100 to 1300 we got between a cloud layer. With the Air Force restricted area just to our west I reprogrammed the GPS, at the completion of that task I fought vertigo turning 540 degrees to the left."

"I fly CH-47's and some of the switches on the overhead panel are not only hard to reach, they are hard to read; especially at night. I wear bifocals when flying, and trying to tilt my head back far enough to read the labels on the switches is near impossible. I solved the problem by purchasing a set of glasses with the prescription cut in the bottom and the top of the lens. The are called "Double D" glasses. I highly recommend them for anyone that wears reading glasses and must read items above head level."

I am a pilot with the Maryland State Police Aviation Division. I fly the SA365 Dauphin helicopter. When ground taxiing the Dauphin, the stabilization system must be disengaged. This requires the pilot to remove his hand from the collective and push two small buttons on the stabilization control panel located on the center console. Prior to takeoff those same two small buttons must be pushed to engage the stabilization system. A far better method would be to have the stabilization engagement/disengagement button on the cyclic or collective. Taking your hands off the flight controls when the helicopter is close to the ground will cause a problem someday. I am only a pilot though."

"The Eurocopter fleet of aircraft that we fly as an EMS provider (BO105CBS and BO105LS) are all equipped with a NAT radio suite that is primarily used by the medical crew for communicating with hospitals, ground ambulances, dispatch, law enforcement, etc. It is located within easy reach of the medical crew in a center console between the pilot and co-pilot seats. On the occasions where a pilot is flying solo (aircraft reposition, ferry, crew pickup, etc.) it is difficult to readily change frequencies without straining your neck and looking left and down. This is further exacerbated when flying at night or during periods of low visibility where disorientation or vertigo could result."

"I find checking and reading the overhead panel on the 206B to be very difficult if not impossible to read due to my farsightedness. I wear progressive lenses thus it is not possible to provide corrective sight for close reading at the top of the lens."

"My answer to your question about what cockpit system/control head/switch/item do I have difficulty reading and reaching is the UHF radio in the TH-57C model aircraft. It is very small and practically underneath the pilot's collective. Also, changing the frequencies is cumbersome because it uses only one knob to go through all the frequencies."

"AH-1S (E and F series) helicopters have their armament circuit breakers under collective stick. There are two types of armament circuit breakers: Toggle Type, and In-Out Type. No difficulty is experienced with toggle types but a little problem I experience with one of the In-Out type. This is the Turret Drive Motor Circuit Breaker. According to checklist, this circuit breaker should be IN position before takeoff.

Pushing it to IN position is not a problem. But in the Before Landing Checks section, the checklist says that the "Turret Drive Motor Circuit Breaker – Out" While in flight, reaching and pulling that circuit breaker is right under collective stick is really difficult."

Thanks for your answers.

Ergonomics: the study of human performance and its application to the design of anything we use to accomplish work. Ergonomics is largely a design function. If applied in the design of an item it would make it safe and efficient for (most) users. Unfortunately, many of the aviation systems we have in place now were designed years ago (1) by engineers who may have had no formal training in ergonomic principles, (2) without specific Human Factors certification criteria, and (3) with other considerations such as function, producibility, cost, and maintainability.

Consequently we have items and systems that may be awkward and difficult to operate.

These items and systems, even though they have some shortcomings, are in-place and cost-efficient. The operators are not apt to replace equipment that is working and making money solely to have a newer design with better ergonomic features and characteristics.

We will be using "old," or not ergonomically perfect designs well into the future.

Until every aircraft and system is ergonomically perfect, it is our job to keep our eyes open to find those things that can trip us up. To recognize that we have to be alert and pay attention to those things that are awkward and difficult to use.

Helicopter Safety Information

The National Aeronautics and Space Agency (NASA) will soon have a Helicopter-related Website. You can access it via their address: Safecopter.arc.nasa.gov

WHAT'S YOUR ANSWER ?

QUESTION:

"Tell us about a situation where hot weather affected you, your crew, or your helicopter's performance."?

_____

_____

_____

_____

_____

Mail your ANSWERS to:

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The primary objective of the HELIPROPS program and the ***HUMAN AD*** is to help reduce human error related accidents. This newsletter stresses professionalism, safety and good aeronautical decision-making.

Letters with constructive comments and suggestions are invited. Correspondents should provide name, address and telephone number to:

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